

02



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,334	06/27/2001	Qing Ma	42390P10606	6477

8791 7590 03/01/2004

BLAKELY SOKOLOFF TAYLOR & ZAFMAN
12400 WILSHIRE BOULEVARD, SEVENTH FLOOR
LOS ANGELES, CA 90025

EXAMINER

COLEMAN, WILLIAM D

ART UNIT PAPER NUMBER

2823

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/894,334

Applicant(s)

MA ET AL.

Examiner

W. David Coleman

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,7,8 and 10-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7,8 and 10-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☒ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see Interview Summary form, filed herewith, with respect to claims 1, 3, 4, 5, 7, 8, 10, 11 and 12 have been fully considered and are persuasive. The rejection of the previous Office Action has been withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3, 4, 5, 7, 8, 9, 10, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al., U.S. Patent 5,399,415.

4. See **FIGS. 1-18** where Chen discloses a method of manufacturing a semiconductor.

5. Pertaining to claim 1, Chen discloses a method comprising:

over an area of a substrate **10**, forming a plurality of three dimensional first structures **20, 21, 22** and **23**;

following forming the first structures, conformally introducing a sacrificial material **14 & 16**(as seen in **FIGS. 1 & 2**) over the area of the substrate including on a portion of the plurality of first structures;

introducing a second structural material **66** over the sacrificial material;

exposing a portion of the sacrificial material (as seen in **4A & 5A**);

removing the sacrificial material; and

wherein removing the sacrificial material comprises suspending the second structural material as a second structure electrically coupled to the first structure (please note that the tungsten elements are suspended and electrically coupled, see Abstract).

6. Pertaining to claim 3, Chen discloses the method of claim 1, wherein exposing a portion of the sacrificial material comprises removing a portion of the second structural material.
comprises removing a portion of the second structural material.

7. Pertaining to claim 4, Chen discloses the method of claim 1, prior to introducing the second structural material, further comprising patterning the sacrificial material (Chen utilizes a photoresist).

8. Pertaining to claim 5, Chen discloses the method of claim 1, wherein the first structural material comprises silicon and the sacrificial material comprises silicon dioxide and introducing the sacrificial material comprises growing.

9. Pertaining to claim 7, Chen discloses the method of claim 1, wherein patterning the first structures defines a plurality of first areas of the portion of the substrate occupied by the first structures and at least a second area of the portion of the substrate free of the first structures, and introducing the sacrificial material comprises introducing the sacrificial material at least over the second area (please note the undercutting in **FIGS. 6 & 6A**).

Art Unit: 2823

10. Pertaining to claim 8, Chen teaches a method comprising:

over an area of a surface of a substrate **10**, lithographically patterning (column 5, lines 26-63) a plurality of first structures, the plurality of first structures having a first dimension about the surface (i.e., the lateral separation of the top surface) of the substrate and a second different dimension;

following forming the plurality of first structures, conformally introducing a sacrificial material layer over the area of the substrate including on a portion of the plurality of first structures;

patterning the sacrificial material;

forming second structures over the sacrificial material;

removing the sacrificial material; and

wherein removing the sacrificial material comprises suspending the second structure by the first structure, and wherein the second structure is electrically coupled to the first structure (see Abstract, where Chen teaches the above limitations in which the second structure is electrically coupled and suspended).

11. Pertaining to claim 10, Chen teaches the method of claim 8, prior to removing the sacrificial material, further comprising exposing a portion of the sacrificial material.

12. Pertaining to claim 11, Chen teaches the method of claim 10, wherein exposing a portion of the sacrificial material comprises removing a portion of the second structural material.

Art Unit: 2823

13. Pertaining to claim 12, Chen teaches the method of claim 8, wherein the sacrificial material comprises silicon dioxide and introducing the sacrificial material comprises growing.

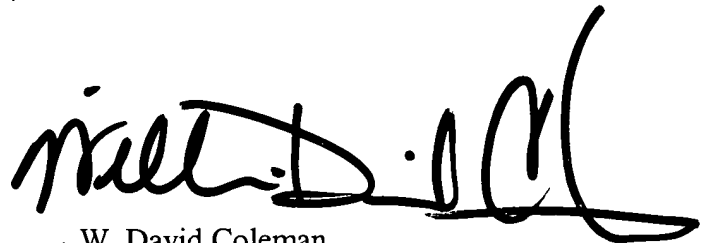
Conclusion

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. David Coleman whose telephone number is 571-272-1856.

The examiner can normally be reached on 9:00 AM-5:00 PM.

15. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703-306-2794. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

16. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'W. David Coleman', with a stylized flourish at the end.

W. David Coleman
Primary Examiner
Art Unit 2823

WDC